

## INNOVATION AUDIT AS AN INNOVATIVE MANAGEMENT TECHNIQUE IN THE AGRICULTURAL FIELD IN SEED COMPANIES

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### Abstract

The agri-food sector has become a competitive one on the market in our country, characterized by dynamism, innovation and sustainability; in this case, seed companies are the most vocal and innovative in this field. In this present study, we aimed to analyze the innovation capacity of the seed producing companies in our country, by examining the key indicators, processes and organizational practices of the organizations. The preliminary results highlight the barriers that appear within organizations in the recruitment process, as well as the identification of the necessary methods to maximize their recruitment capacity. The basic instrument of the innovative audit is the questionnaire, and the element of novelty is given by the four elements: the organization and culture of innovation, the strategy and ability to invoke innovative processes and innovative products. The results are presented in the spider diagram based on the score between the categories; they bring out the creativity of people in an organization, the identification and control of barriers that prevent creativity and innovation within the organization, as well as marketing practices to promote innovation.

**Key words:** innovation audit, innovative management, agrofood sector

In recent years, there is more and more talk about innovation, but few people talk about the fact that this topic, of innovation, is closely related to the ability to learn, and innovation is generally related to solving problems.

In the book *Capitalism, socialism and democracy* (Schumpeter J., 1942), the American economist Schumpeter defines the term innovation for the first time, by which he mentions, in a general way, that innovation means "to produce something else or to produce differently".

About innovation we can say that it is a global process that involves intuition, insight, critical spirit and creativity, both from a technological and commercial point of view, moreover, what good is a product or a technology if it is not properly promoted. To the same extent, the transfer of an idea, a concept or a product is considered to be part of the innovation process.

As for the innovation audit, it represents a concrete method of improving the innovation capacity of an enterprise. By means of it, strengths and weaknesses can be defined, key indicators analyzed and ways to improve innovation and optimize activities throughout the organization can be identified.

The innovation audit is a practice following which possible barriers that block or slow down

the innovation process within companies can be identified. The purpose of this type of audit is to identify strengths, but especially weaknesses, in order to encourage companies to work on developing and maximizing innovation capacity.

This thesis aims to analyze the innovation potential within seed companies.

Within a company producing seeds, the application of the innovation audit will be like an engine in highlighting and emphasizing the creativity of the people in the enterprise. Also, through this type of audit, the following can be analyzed: the degree of innovation (how inventive is the staff in charge of this department); the identification and control of barriers, an aspect that contributes to stifling creativity and innovation within the organization and favoring innovation in the organization's culture.

### MATERIAL AND METHOD

The study is based on an innovation audit questionnaire, where the questions are grouped into four pillars, as follows:

➤ *innovation organization and culture* – category that is focused on innovation management and the integration of innovation management into the company's culture;

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➤ *innovation strategy and capacity* – the approach to mechanisms and activities regarding innovation management is analyzed;

➤ *innovative processes* – operational activities and structural elements that can be used in view of the results accepted on the market;

➤ *innovative products* – this category deals with the technical evaluation, whether they are appropriate or not, but also how much they can contribute to the successful achievement of the goals regarding the innovative processes.

This document creates a methodology and a tool that will support entities that work in the field of technology transfer and innovation to analyze the company's ability to be innovative, to create competitiveness.

The study is carried out at a number of five seed production companies, multinational, with private capital, leaders on the corn, sunflower and rapeseed market. They operate on the Romanian market through regional sales teams and have opened departments for product research and development.

The architecture of the questionnaire, as I mentioned before, is based on the four pillars. There are 3 questions for pillar I, 8 questions for pillar II, 7 questions each for pillar III and pillar IV. The answers were based on a scoring scale, from 1 to 5, where 1 - very low, 2 - low, 3 - moderate, 4 - high and 5 - very high.

Before completing the questionnaire, we obtained the companies' consent to survey them, sending them the questionnaire template in advance. In a period after the spring campaign, when the sales of seeds for the main crops ended and the sowing ended, I made a 3-5 hour visit to each company, every day of the working week visiting a company. The discussions took place at the headquarters of the companies, where the general manager, marketing and audit representative of each company were present. 3 out of 5 companies also invited the research representative to answer more complexly some questions regarding the innovation activity.

Respecting the GDPR, we created a schematic profile of the companies studied, starting from the identification data, the turnover, the average number of employees and the brief description of the company's activity. We signed the agreement by which we assume the confidentiality of the data, explaining in detail the content and objectives of the questionnaire in general, as well as the benefits of the companies participating in this scientific study. The representatives of the surveyed companies confirmed every time the correct understanding of the questions and that their answers are based on

the reality and potential development of the business.

## RESULTS AND DISCUSSIONS

The results of the report are based on the analysis of the answers and marks given on the basis of the questionnaire. Thus, the report after collecting and analyzing all the answers, reflects the results of the questionnaire and realizes the profiles from the point of view of innovation regarding the four previously mentioned pillars.

### The organization and culture of innovation

The agricultural market in Romania, especially the seed market, is dominated by private companies. All the companies studied have established sustainability departments, acting according to the principle of sustainability, producing more food with fewer resources.

Their interest in developing and innovation is obvious. Although they have research and development departments, innovation actions are incipient. Staff recruitment did not take into account experience in the field of innovation, something that can be seen in table 1. The attitude of companies regarding this aspect is changing, because they invest in training programs for employees, something that is evaluated as high in the presented questionnaire.

Regarding the development of new products in the last 3 years that influence a better ranking by increasing the market share, the companies are evaluated as being weakly innovative. All company representatives presented that the bureaucracy and the long process of testing new products prevent a high efficiency of innovative products. I have also identified the problem of the performance of new products, of production costs for new innovative products, in the case of hybrids and varieties, as well as European legislation with different applicability from country to country.

The positive aspect regarding the series of questions regarding innovative culture and organization is the fact that the latest technology in the field of seeds is regularly followed,

3 out of 5 seed companies confirming the fact that one of these technologies is widely applied through their own development or through partnerships of digital crop tracking software, with the help of satellites or drones specialized in these evaluations.

Table 1

**Innovation Organisation and Culture**

Innovation audit questionnaire*	Seed Company 1	Seed Company 2	Seed Company 3	Seed Company 4	Seed Company 5	Average
Has your company developed new products in the last 3 years that have led to a significantly better market position?	4	2	2	3	2	2.6
Do your employees regularly participate in trainings and specialization courses for qualification in your field of activity?	4	4	2	3	2	3
Do you regularly follow up-to-the-minute technology, research in the field of technology, SWOT analysis, market opportunities and trends in your field of activity?	5	4	3	3	3	3.6
Evaluate the attitude of the staff accordingly. of innovation?	3	2	2	2	2	2.2

\*1 – Not at all, 2 – Low, 3 – Medium, 4 – High, 5 – Very high/mandatory

All the companies in our study answered that they have a short-, medium- and long-term strategy. Additionally, a large part of the information regarding the innovation strategy is present on everyone's website, except for the capacities regarding the volumes, which remained confidential. It should be noted that it is a unanimous answer shared by the top 5 seed

companies in Romania regarding the current and future impact of innovation, which is rated as very high (table 2). Also, it is considered that management performance can be greatly improved along with innovation capacity, which will lead to a more complete evaluation of the management system.

Table 2

**Innovation Capability and Strategy**

Innovation audit questionnaire*	Seed Company 1	Seed Company 2	Seed Company 3	Seed Company 4	Seed Company 5	Average
Does your operational activity in the activity sector follow or take into account the innovation strategy?	4	3	3	3	3	3.2
Does your company use a systematic method to continuously develop and invent new technologies for the future?	4	3	2	4	3	3.2
Do you exploit sustainability as an engine for innovation when developing your innovation strategy?	4	4	3	3	4	3.6
In your company, are the projects clearly defined and, respectively, are the objectives and problems addressed effectively?	5	4	3	3	4	3.8
How much can the current leadership/management performance be improved in terms of innovation?	3	5	5	5	5	4.6
How much can the current leadership/management performance be improved in terms of innovation?	4	3	3	3	3	3.2
What is the current and future impact of innovation on the success of your business?	5	5	5	5	5	5

\*1 – Not at all, 2 – Low, 3 – Medium, 4 – High, 5 – Very high/mandatory

The organization of innovation is not always the strong point of the companies studied. On average, the activity of seed companies in Romania is evaluated as having a medium-high interest in following the sowing strategy, which creates discrepancies between the operations,

general management and planning teams. This aspect is again under the sign of the bureaucratic public system, less determined by internal capabilities.

Looking at the behavior of the investigated companies in the innovation processes, we noticed

that those that did not have large-scale implications for the development of new products, recovered at the moment, even surpassing others that had a constant trajectory (*table 3*). We exemplify here the new sunflower hybrids with high tolerance to the mildew (*Plasmopara helianthi*) or small-sized maize.

This is only a proof of the fact that the certified seeds market in Romania is a dynamic one, constantly changing, and the purchase decision of the farmers is based on scientific arguments, being less influenced by marketing.

Table 3

Innovation processes						
Innovation audit questionnaire*	Seed Company 1	Seed Company 2	Seed Company 3	Seed Company 4	Seed Company 5	Average
Have you identified the potential sources of innovation in the field of seed production (internal or external)?	4	3	4	3	4	3.6
How much time (in months) do you allow for obtaining the most profitable groups of products/services from the beginning of development (project authorization) until taking over (or do you expect to obtain) your product/service on the market?	4	4	4	4	4	4
On average, how many months did it take for your most profitable product/service groups to be achieved starting from project authorization to launch - the intervention point?	5	5	5	4	5	4.8
To what extent have you identified the potential sources for financing your innovative ideas?	3	3	3	3	4	3.2
To what extent is the company currently or has it been involved in the previous period in innovative (transnational) projects?	2	2	4	3	4	3
Do you exploit the results of development or innovative projects for the expected recovery of the investment which leads to the expected return on investment?	3	4	3	4	3	3.4
What is the level of resource consumption of innovative processes/projects compared to your daily operations?	3	3	3	3	3	3

\*1 – Not at all, 2 – Low, 3 – Medium, 4 – High, 5 – Very high/mandatory

Even if we are talking about multinational companies, internal investments are carried out according to extensive internal procedures, which are based on approval levels, depending on their complexity, the financial impact involved and the external impact. The companies assessed that a very long time was needed to transform the innovation idea into a concept and then reproducibility on a large scale (*table 3*). Even if it was a long process, this is also explained by the biology of the improved and produced species. Speaking of corn, the innovation of the DH

It should be noted that all companies evaluated the financial impact related to the individual activity regarding the development of new products as medium, which determines a continuity. We can thus speak of a sustainable research/development or innovation, where the actors involved draw up long-term plans, evaluate the impact and in the meantime prepare farmers and agricultural holdings for future changes.

(dihaploid) concept led to obtaining hybrids in 2 years, compared to the classical method, but problems arose when the decision was made to produce seeds on a large scale. Compared to corn, we are talking about hybrids of sunflower, rape, sugar beet and vegetable species, which have a long process of improvement, testing, homologation and production.

The funding sources were always internal, but the allocation of resources was carried out after a complex analysis and especially after evaluating the long-term impact.

Because we are talking about financial impact, I summarized in the discussions with the representatives of the investigated companies, the fact that they pursue the increase in profitability, not only through their own sales teams. Most of the new hybrids and varieties developed, are intended for sale to other companies, competing practically on the same market (*table 4*). We are talking about such delegated contracts where the copyright is

paid to the innovative company. This is more and more visible in the phenotype of the plants, something that creates a production standard, but

first of all, the national productions and implicitly the turnover of agriculture in Romania increases.

Table 4

Innovation Products						
Innovation audit questionnaire*	Seed Company 1	Seed Company 2	Seed Company 3	Seed Company 4	Seed Company 5	Average
Are the trends in research and technology innovation in the field of seed production anticipated in your company?	4	3	2	4	3	3.2
Are the implementation of new research and innovation results for your technology analyzed in the company?	4	3	3	4	3	3.4
Do you commercialize internally developed ideas, concepts and products (licensing or sales to external partners, clients, etc.)?	4	2	2	3	2	2.6
Do your products integrate acquired or licensed IP, technologies or other knowledge-based elements in the economy?	3	3	4	3	3	3.2
How would you rate the level of improvement of your products compared to competitors' products/market level/previous versions or existing products?	4	3	3	4	3	3.4
To what extent do the generated patents cover all the technologies developed, and have the technologies been successfully introduced to the market?	3	3	4	3	3	3.2
Do you have a development/expansion/future version strategy for your products/services?	5	3	4	4	4	4

\*1 – Not at all, 2 – Low, 3 – Medium, 4 – High, 5 – Very high/mandatory

It is not at all surprising the companies' approach regarding the evolution of the seed market in our country regarding the trends in the research-innovation field. The interest regarding this aspect is considered medium on average, but there are also companies that have a low interest. Developing this aspect and investigating things in more detail, we notice the fact that the approach is different because of the phytosanitary products associated with the seed. Thus, for commercialization, 99% of certified seeds in Romania are treated with fungicide, preventing the attack of pathogens in the early stages, from sowing to crop emergence. Returning to the different approach of the companies, we notice that the multinationals that also have a plant protection department are more interested in the trends in the field of seeds, because they have to adapt their products in accordance and reciprocity; on the other hand, the companies whose activity is only on the seeds part, are less affected by this, having a low interest in new trends. This is approached as an opportunity aspect by the seed companies, because they depend on the annual derogations from the Ministry of Agriculture and from the Commission of Agriculture of the European Union

(especially the derogations for insecticides based on neonicotinoids).

The innovation audit is a new tool for evaluating management performance and innovation processes within companies in the agri-food sector. The actions of the seed producing companies in our country are based on quality, this not being left to the criticism of the farmers, but having total control over it.

The investigations carried out at the headquarters of the companies under study weighed the commercial effect and the innovation effect, the long-term prospects, in general, and the innovation management. All actors in the agri-food field, especially those in the seeds field, agree that future performances are correlated with the effect of innovation, including here the supply chain elements, but also addressing research elements in reducing COGs.

It is obvious and reconfirmed by the representatives of the companies that they regularly follow the latest technology, respectively research in the field of technology, SWOT analysis, market opportunities and trends in the field of seeds.

We appreciate the fact that all the companies participating in the proposed questionnaire were proactive and gave complex answers regarding innovation capabilities and strategy. It should be noted that innovation, as a management process, goes hand in hand with operational management. Thus, leadership is currently evaluated, but more so in the future, depending on the innovation capacity and strategy.

Considering, however, that they are at the beginning of the innovation activity on a national level (even if they have vast experience on a multinational level), the agricultural specificity of our country, the companies position themselves as having a lot to improve in the innovation activity, but also from the point of view strategic.

### CONCLUSIONS

The innovation process is practically the longest in the innovation chain. Thus, all the answers were presented as requiring a long time to transform the idea of innovation into a concept, then design and implicitly production and processing until the launch of the product. Speaking of a multitude of plant species, with different biology, this aspect is actually also an advantage, which balances the annual costs and innovation process and the development of new products brings benefits internally, but also echoing externally through such proposals. Even if the products compete on the same market, as we said about the agricultural specificity of the

country given by the multitude of agricultural areas and farms that adopt different technologies, it frames the seed market in a dynamic, characterized by diversity.

The agricultural business, but especially the one with certified seeds, is the one that participates the most in the performance of farms, being the first factor that influences future production. Starting from this aspect, taking into account the high innovation costs, many companies and distributors active on the Romanian market, turn to multinational companies, for hybrids in the form of delegation.

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